

# Acadia Geology Alumni/ae Newsletter

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## VIEW FROM ACADIA

After 32 years of avoiding the job, at least formally, I finally stepped in as Acting Head of the Department of Earth and Environmental Science in July, 2008, to enable the real head, Rob Raeside, to continue in his role as Acting Dean of Pure and Applied Science. Be assured that I am hoping that the “view from Acadia” will be written again by Rob a year from now.

Looking back on those 32 years at Acadia mentioned above, I think that one of the best aspects of university life is that it is constantly changing. In last year’s newsletter, you read about how the merger of the Department of Geology with the Environmental Science program in July, 2007, had resulted in a larger and stronger Department of Earth and Environmental Science. The merger did not result in any changes in the degree programs offered – we still have Geology courses and Environmental Science courses and offer regular and honours undergraduate degrees in Geology, Environmental Geoscience, and Environmental Science, as well as MSc degrees in Geology and, as of 2008, Applied Geomatics.

However, because your personal “snapshot” of these degree programs is short (normally 4 years as an undergraduate or two years as a MSc student), you may not be aware that the courses and course requirements in these degree programs evolve on a yearly basis – almost every year we make modifications to one or two courses and take them through the lengthy approval process that is required (from the departmental level to the science department heads, the Science Faculty Council, the University Curriculum Committee, and finally the University Senate). However, periodically circumstances conspire to lead us to make more dramatic changes, and 2008 has been one of those years.

In order to provide a more rational distribution of content between the two second-year GEOL courses that are required for Geology, Environmental Geoscience, & Environmental Science students, beginning in 2009 we will offer a revised Mineralogy course in the Fall term that includes the study of minerals in hand specimen and thin section. It will be followed by a winter term course, Techniques in Petrology & Stratigraphy, which will cover fundamentals of igneous, sedimentary, and

metamorphic rocks, and which in the labs will include both hand specimen and thin section work. This change will provide a better balance of instruction on all rock types in a single course. We think that it will be especially beneficial to Environmental Science students, for most of whom this course will be their last formal look at rocks. To put these changes in terms that most of you will understand, the courses you knew as “sed/strat” and “optics” will no longer exist. But much of the material in those courses will be part of the two new courses.

Some major changes were also made at the third and fourth year levels. Now students can choose to take any three of: Clastic Sedimentology and Petroleum Geology, Carbonate Sedimentology and Reservoir Development, Igneous Petrology, and/or Metamorphic Geology. Of course, we will encourage students to take all four! And to facilitate that possibility, we have reconstituted the material in three other courses into two new courses: Structural Geology and Tectonics (Fall term) and Global and North American Geology (Winter term). In addition to providing a little more choice for our students, these changes also facilitate the transfer into Geology or Environmental Geoscience from other programs at Acadia, or from other college programs, as many of our majors do. As always, we were careful in introducing changes to ensure that our graduates continue to meet the course requirements for professional registration, and that students will leave here with both the depth and breadth of formal education that will take them wherever they want to go.

Other positive changes external to the Department of Earth and Environmental Science in 2008 have also occurred at Acadia in 2008. You may have heard that we have a new Vice-President Academic in place (Dr. Tom Herman from the Biology Department), and the search for a new president is in its final stages. The Acadia Advantage program, innovative in the 1990’s, has evolved to a new model, in step with the current technological world. And a new budgeting procedure and emphasis on recruiting have us all optimistic about the future, in spite of the tough economic times.

Sandra Barr

## Barry Cameron (1940-2008)



Dr. Barry Cameron passed away in late August this year after a protracted period of illness. Barry's career in the Geology Department started in 1981 when he came to Acadia from Boston University as department head. However, unknown to most people is that Barry was actually the first Nova Scotia-born head of Geology since Merle Bancroft who was head from 1923-1959. Barry was born in East Earltown, Pictou County, but moved to Massachusetts as a young boy.

Barry's career as a geologist began with graduation with a BA in Geology with distinction from Rutgers University, New Jersey, in 1962 where he wrote a thesis on the morphological variations of foraminifera. From Rutgers he moved to Columbia University in New York where he continued foram studies, this time from deep water near the Bahamas. Following completion of the MA in 1965 he continued at Columbia University, taking his PhD in 1968 under the supervision of Marshall Kay and John Imbrie where his thesis was "Stratigraphy and Sedimentary Environments of the Lower Trentonian Limestones (Middle Ordovician) of New York and Southeastern Ontario."

From 1967 to 1981 Barry worked at Boston University, as instructor, assistant and associate professor before becoming professor and chairman in 1980. His stay as chair at Boston was destined to be short, however, because upon the completion of George Stevens' 17-year term as head at Acadia, and with healthy enrolment numbers in Geology the university authorized an external search for a department head, effectively increasing the faculty complement in Geology from four to five. Under his

headship the department increased again in size from five to six faculty with the appointment of Nancy Van Wagoner in 1983. (Rob Raeside's arrival in 1982 was as a replacement of Rupert MacNeill's position.) Through this period, Geology programs across the country were experiencing a boom, and Barry had the task of managing the coordination (and bills) for multiple labs in all the second year courses and a field school with 60 participants. He continued as department head until 1986 when he stepped down to become a professor with responsibilities for courses in paleontology, petroleum geology and oceanography.

Probably Barry's greatest legacy is the many students he mentored as budding paleontologists through his 24 years at Acadia. When he retired in 2005 he was thrilled to receive reminiscences from many of you who wrote to relate your experiences in the bowels of Huggins extracting microfossils from sand or limestone, or carefully angling thin beams of light to reveal a dinosaur or amphibian track on a massive slab of sandstone, carefully rescued from the beach.

Another significant legacy Barry has left us is the introduction of the course(s) in Oceanography. He pioneered a general first-year level course in Oceanography in 1984 with 30 students, which more than doubled in 1985 and doubled again 1986. From then till he retired, he never had an enrolment of less than 190 in the General Oceanography course, and equally high enrolments in a subsequently developed Coastal Oceanography course. In one year he taught over 800 students in the oceanography courses and we calculate that he probably taught fully one-third, and at times nearly one-half, of all the students who graduated from Acadia. Although the student reviews were mixed, dozens of Acadia Geology graduates owe their life's careers to that initial general interest course in Oceanography from Barry Cameron.

Barry is survived by his wife, Diane, and his daughters Heather and Charina. All his family were familiar faces around the department, with many science fair projects emanating from his daughters' desk in his office. Following very successful runs at the provincial and national levels in solar flare surveying and bee biology, both Heather and Charina completed degrees at Acadia, not surprisingly in Physics and Biology, respectively. Heather went on to study at the graduate level in Toronto, before returning to Acadia to complete a B.Ed. degree last fall, while Charina continued to a nursing degree and now works in Toronto.

## HAPPENINGS

More than 10% of the attendees at the Atlantic Geoscience Society meeting in Dartmouth, NS, in early February were staff and students from Acadia (about 25 in total). A number of our students had posters on display and congratulations are due to Kieran McDonald whose poster (co-authored with David Piper and Ian Spooner), entitled "A Holocene sedimentary record of the Labrador Current" won the Graham Williams Award for best student poster at the conference. In addition, Kara-Lynn Scallion's poster (co-authored with Peir Pufahl and Sandra Barr) entitled "Phosphate deposits in Cambrian rocks of Avalonia in the Saint John area, New Brunswick" received the "honourable mention".

The Environmental Science part of the department was well represented by students and faculty at the APICS Environmental Studies Conference at St. Francis Xavier University in March. Kieran McDonald received the best presentation award. Other presentations from Acadia were by Katherine Dugas, Emma Vost, and Kaitlin Almack, and a poster by Brendan McNeill.

During the mid-term break, Stephanie Anderson, a MSc student in Geology, participated in a field school investigating the geology and petroleum industry of Trinidad organized by Dr. Grant Wach of Dalhousie University. Much appreciated financial support was provided by the Department of Energy to allow students from universities in Nova Scotia to participate in energy-related training opportunities outside of the province.

Acadia's Spring Convocation was held on May 12<sup>th</sup>. Four students received BSc degrees in Geology, two of which were BSc Honours degrees. In addition, two degrees were awarded in Environmental Geoscience, 4 degrees in Environmental Science with Honours, and 3 regular BSc degrees in Environmental Science. Four students received MSc degrees in Geology. We wish all of our graduating students the best of luck and good fortune, and hope that they will continue to keep in touch with us (so that we can feature them in this newsletter, for example!).

The department was well represented at the GAC-MAC meeting in Quebec City in May, with poster presentations by undergraduate student Kara-Lynn Scallion and graduate students Matthew Tucker, Tamara Moss, and Pizye Nankamba and their supervisors. In addition Sandra Barr was co-author on three oral or poster scientific presentations. Sandra was honoured to receive the Career Achievement Award of the Volcanology and Igneous Petrology

Division of the Geological Association of Canada at the annual meeting of the Division in Quebec City.

During the Fall term, students and faculty members represented the department at the Atlantic Universities Geological Conference at UNB in Fredericton, NB, and at the annual reviews of the New Brunswick and Nova Scotia departments of Natural Resources in Fredericton and Halifax, respectively.

As usual, throughout the year we had a number of visiting speakers in the department on a variety of topics. Many of these visits were part of national or regional lecture tours sponsored by groups such as the Geological Association of Canada, Canadian Society of Petroleum Geologists, Canadian Society of Exploration Geophysicists, and the Atlantic Geoscience Society. These contacts with the broader geoscience community are good for both students and faculty, and we appreciate being included in the tour schedules.

The department was pleased to welcome three new adjunct professors in 2008. **Dr. David Risk** of the Department of Earth Sciences at Saint Francis Xavier University will be collaborating with Canada Research Chair Nelson O'Driscoll on their mutual interests in biogeochemistry. We welcomed the return of **Dr. Brendan Murphy**, also of the Department of Earth Sciences at Saint Francis Xavier University, as an adjunct in his role in the thesis project of MSc student Edwin Escarraga. **Dr. Elisabeth Kusters**, a geological consultant based in Wolfville, joined the department as an adjunct professor in recognition of her role in assisting with the MSc thesis of Pizye Nankamba.

## FACULTY AND STAFF NEWS

**Sandra Barr** had a busy year in 2008. In addition to teaching all or part of the usual courses, she continued as editor of *Atlantic Geology* and as Books Editor and "presidential advisor" in the Geological Association of Canada. She presented and co-authored papers at the NEGSA meeting in Buffalo, NY, in March and the GAC-MAC meeting in Quebec City in May. In July, she hosted paleontologists Teodoro Palacios and Sören Jensen, from the Universidad de Extremadura, Badajoz, Spain, on a two-week sample collecting trip in Cambrian rocks of Nova Scotia and southern New Brunswick. This exciting collaboration has already resulted in a publication in the journal *Palaeogeography, Palaeoclimatology, and Palaeoecology*, not a journal in which she ever expected to be the co-author of a paper. Her other field work during the summer was mainly in southern New Brunswick

where she is working in collaboration with geologists at UNB on major shear zones within Avalonia. This collaboration resulted in her being co-leader of a field trip for the Canadian Tectonics Group and Structural Geology Division of GAC. Her other major research focus these days is on the provenance of sedimentary rocks using geochemistry and detrital zircon and muscovite geochronology. Maybe it is indeed possible for old dogs to learn new tricks?

**Lynn Graves**, our very capable secretary, continues to meet the challenge of managing faculty and students in two separate locations, and it is fair to say that her adaptability and reliability have been essential to the success of the merger of the Geology and Environmental Science programs. Another particularly notable achievement by Lynn during 2008 has been getting the budget for the merged department into an organized and manageable form, in which expenditures can be properly tracked and accounted for.

**Elisabeth Kusters** joined us again during the Winter term, teaching Stratigraphy, and once again Global Tectonics, and we appreciated her help. She continues in her job as business manager of the Canadian Federation of Earth Sciences, a role that gives Wolfville a further reason (in addition to our department) for being well known in the Canadian geoscience community.

Environmental Science Professor **Linda Lusby** was chosen by Uniterria as one of eight women who are making a difference in Canada and the world, in honour of International Women's Day in February, 2008. You can see Linda's profile at: <http://www.uniterria.ca/uniterria/en/index.html>. Linda was also invited to join the ECO Canada (Environmental Careers Organization) National Steering Committee for the development of a national accreditation system for post-secondary environmental education programs. The accreditation system attends to the needs of educational institutions that offer environmental programs and Linda's participation will ensure that ECO Canada's accreditation project will not only have a voice from Acadia, but also an experienced campaigner for environmental science education since its inception at Acadia. Linda is also the incoming president of the Canadian Universities Environmental Science Network (CUESN) for a 3-year term. The CUESN links program heads from environmental science programs in universities across Canada. The organization was originally formed to share best practices among environmental science programs and to participate actively in both the

accreditation of programs and registration of individuals.

**David McMullin** continues to teach several courses (or parts thereof). In the winter, in addition to part of Earth History (1023) he taught Metamorphic Geology (3503) for the second time. He was able to make the course more his own this year, but more remains to be done. The Spring saw his usual involvement with Field Methods and then Natural Disasters in the Spring intersession. Because Ian was due to go on Sabbatical in the Fall, David taught the largest ever class in geology, 274 people in Natural Disasters. Classes this large are not great as there are too many to get to know even the best and keenest students.

As 2008 came to a close David was gearing up for his sabbatical from January to June 2009. He will be teaching aboard a tall ship, the SY Fryderyk Chopin, which is one of the 2 ships operated by Class Afloat. The Class Afloat program, based in Lunenburg, became affiliated with Acadia a few years back and recently Acadia faculty have been spending time aboard ship teaching classes. David leaves for Brazil in late January and will spend 3 months sailing from Brazil back to Lunenburg with various stops in the Caribbean. Aboard, David will be teaching three courses, Our Dynamic Earth (GEOL 1013), General Oceanography (GEOL 1033) and Natural Disasters (GEOL 1073). David hopes to keep a blog going (and updated when he gets to port). Those who wish to follow his progress can find his blog at <http://earthatsea.blogspot.com>.

Canada Research Chair **Nelson O'Driscoll's** environmental biogeochemistry lab ([www.acadiiau.ca/~nodrisco](http://www.acadiiau.ca/~nodrisco)) at Acadia University is quantifying the movements of mercury in Canada and internationally. The group is funded by NSERC, CFI, CRC, and Environment Canada to examine why some remote ecosystems retain mercury more than others and how factors such as climate change, solar radiation and organic carbon affect retention and loss processes. Collaborations in 2008 include: João Canario (visiting scientist - mercury in coastal wetlands), Asif Qureshi (visiting PhD - modeling mercury in oceans), Sam Edmonds (M.Sc. - mercury in blackbirds), Emma Vost (M.Sc. - mercury reduction in lakes), and several undergraduate projects on mercury and carbon dynamics.

**Don Osburn** returned to a four-day/week work schedule early in the year, and then to full-time work in October. The additional day is not being funded by the university but through external work, making thin and polished sections for researchers at other universities, as well as in government and industry.



As a result, Don is busier than ever, and the rock room is functioning with incredible efficiency. So any of you who may have need of such “rock-room services” can contact Don directly at [don.osburn@acadiau.ca](mailto:don.osburn@acadiau.ca) or 902-585-1513.

**Peir Pufahl** spent time last summer with his new MSc student, Cole Edwards, in northern Quebec studying Paleoproterozoic sedimentary rocks. Cole comes from the University of Wisconsin (Oshkosh) and thoroughly enjoys his move to the Maritimes. Stephanie Anderson, another of Peir’s M.Sc. students, will defend her thesis in early February. Stephanie’s thesis focuses on understanding iron formation deposition in the Labrador Trough. Peir’s chapter on bioelemental sediments will appear in the new edition of *Facies Models*. This popular textbook published by the Geological Association of Canada will be released in the spring. Peir was also recently awarded the Petro-Canada Young Innovator Award for research and teaching excellence. He looks forward to leading his short course on modern and Pleistocene carbonate sediments of Bermuda this May. The short course is aimed at understanding the development of hydrocarbon reservoirs in limestone. If you are interested in participating in his Bermuda short course next year please do not hesitate to contact him.

**Rob Raeside** continued as Dean of Science, but still taught Optics, Atmosphere Weather and Climate, and parts of the Global Tectonics, Geology of North America, and first-year Earth History courses. He attended the GAC-MAC meeting in Quebec City, where he encountered several graduates. At the Quebec City meeting, his latest editing projects, short course texts on “Working with Migmatites” and

“Recent and not-so-recent Developments in Uranium Deposits and Implications for Exploration” – available from the MAC website – were released. Through much of the summer he completed the editing of a third text on “Laser Ablation ICP-MS in the Earth Sciences”.

**John Roff** a Tier 1 Canada Research Chair in Environmental Science since 2004, retired in June of 2008. He spent the Fall term teaching on the same ship that David McMullin will be joining in January, but sailing from Copenhagen via the British Isles, the Mediterranean and Canary Islands to Dakar, Senegal.

Over the last year **Ian Spooner** has been busy wrapping up some projects in British Columbia and starting a few new ones in Nova Scotia. He has been working on the Holocene climate dynamics in northern British Columbia with Dr. Jerry Osborn (University of Calgary). They have just submitted a paper that investigates the timing of advance and retreat of the Bear River Glacier (Stewart, B.C.) during the late Holocene. He has also been conducting environmental assessment work on a large open pit development in the Coast Ranges of northwestern B.C. In the summer, Chris Bates (M.Sc. Applied Geomatics 2008) finished his project work which was focussed on identifying glacial rebound features in the Bay of Fundy. Chris was supervised by Dr. Tim Webster (Advanced Geomatics Research Group) and Ian, and the same pair are also currently supervising M.Sc. AG research by Meredith Roik in which LiDAR technology is being used to investigate ground disturbance associated with unauthorized mining in the Glace Bay region. Ian is also working with Dr. Chris Hopkinson (AGRG) and Tim Collins



Left: Ian Spooner at the controls of his (relatively) new research vessel, the H.M.S. Fletcher, in Cape Breton Island (Photo F. Isenor). Right: Dr. Peter Williams (Acadia Physics), J.P. Huang and Ian Spooner at the Wolfville Library, October, 2008.

(M.Sc AG candidate) on snow pack prediction in the Front Ranges in the Canadian Rockies. Ian's research in Nova Scotia has been focused on understanding how aquatic systems react to climate change. He has been conducting research on wetlands with Bryan Martin (M.Sc. Memorial University), Tom Herman (Acadia) and Brennan Caverhill (Parks Canada), and has been working on water reservoir dynamics in Cape Breton Island (see photo) with Fenton Isenor (Cape Breton University). He continues to play music in and around Wolfville with the Mud Creek Boys most recently appearing at the Al Whittle Theatre and the Wolfville Library (see photo).

**Cliff Stanley** visited the Quebrada Blanca porphyry Cu mine in northern Chile with graduate student Tamara Moss in July, getting to brave the 15,000 ft elevation rarified air while logging drill core. Cliff said that it took two days before he realized his brain wasn't working, then two more to actually start working, and even then he didn't understand the language! Over the summer, he also was busy helping graduate student Pizye Nankamba on her study of the Three Mile Plains 'roll-front' uranium deposit here in Nova Scotia, and working with Nelson O'Driscoll and his daughter, Olivia, on a study of pan fish and lake water Hg concentrations in Wisconsin (he is helping out as part of her science fair project). Cliff was recently honoured with a Distinguished Lectureship from the CIMM, and will be touring Canada extensively between February and May this year in that capacity, presenting a lecture on modern methods of analytical quality control.

### GRADUATE STUDENTS

Several students finished their graduate studies in 2008. **Sheri Lyon** defended her thesis entitled "Sources of magnetic and gravity anomalies on the Scotian shelf southeast of Cape Breton Island and onshore-offshore geological correlations using geophysical modeling", co-supervised by Sandra Barr and adjunct professor Sonya Dehler (GSC Atlantic). Sheri is now working in mineral exploration in northern Ontario. In February, **Gabriel Nelson**, supervised by Peir Pufahl, defended his thesis on "Chemical and physical paleoceanographic constraints on Paleoproterozoic phosphorite and iron formation accumulation, Baraga Group, Michigan, USA". Gabe is now working in Australia and you can read an update on his activities elsewhere in this newsletter. **Chris Bates** was the first student to complete a project-based MSc in Applied Geomatics in the area of geoscience. His project was entitled "Sea-level changes in the Bay of Fundy region: isostatic and eustatic controls", supervised by Ian

Spooner and adjunct professor Tim Webster (CoGS), was completed in August, and Chris is now working in Halifax. In December, **Andrea Lundrigan (Locke)** defended her thesis on "Glacial stratigraphy and till geochemical dispersion controls associated with the Brazil Lake Pegmatite, Yarmouth County, Nova Scotia", supervised by Cliff Stanley and Ian Spooner. Andrea completed her thesis while meeting the demands of a fulltime job as a geo-environmental scientist with AMEC Earth & Environmental in St. John's, as well as motherhood (her daughter Audrey is now approaching 2 years old).

Continuing students and their projects are:

**Stephanie Anderson:** Chemical sedimentology of Paleoproterozoic phosphatic iron formation in the Labrador Trough and the evolution of the early ocean. Supervisor: P. Pufahl.

**Tim Collins:** Using LIDAR to evaluate snowpack variability in the Front Ranges, Canadian Rockies. Supervisors: I. Spooner, C. Hopkinson (AGRG) (MSc in Applied Geomatics).

**Cole Edwards:** Paleoproterozoic bacterial ecosystems. Supervisor: P. Pufahl.

**Edwin Escarraga:** Field relations, petrology, and tectonic implications of Devonian-Carboniferous(?) plutons in the Antigonish Highlands, Nova Scotia. Supervisor: S. Barr.

**Dan MacDonald:** Mineralogy and paragenesis of the Ni-Mo-layered sulfide horizon: a potentially new type of stratiform SEDEX deposit, Yukon Territory, Canada. Supervisors: P. Pufahl, L. Groat. On leave, 2008-2009.

**Tamara Moss:** Lithogeochemistry of hydrothermal alteration at the Pampalina porphyry Cu deposit, Region 2, Chile. Supervisor: C. Stanley

**Pizye Namkamba:** Geology, geochemistry, and mineralogy of the Three Mile Plains U deposit, Nova Scotia. Supervisor: C. Stanley.

**Meredith Roik:** Using LIDAR to investigate subsidence features in the Glace Bay region, Cape Breton Island, NS. Supervisors: I. Spooner, T. Webster (AGRG) (MSc in Applied Geomatics)

**David Swanton:** Geology and mineralization in the Whycocomagh Mountain area, Cape Breton Island. Supervisor: S. Barr.

**Feseha Tesfai:** Petrogenesis of the Lower Coverdale Ti-V-P gabbro-anorthosite suite, southeastern New Brunswick. Supervisor: S. Barr

**Matthew Tucker:** Geology and mineralization in the Faribault Brook area, western Cape Breton Island, Nova Scotia. Supervisor: S. Barr

## A GREAT SOUTHERN LAND

A year ago at this time, I knew that by now my MSc thesis would be complete, but I certainly could never have guessed where I was to end up living.

The first night here I took a short amble around the block to get away from the serviced apartment and boxes containing all my belongings. Rounding a corner in the footpath I was staring up at unfamiliar stars and breathing in a sweet tinge of eucalyptus until a scuttling in grass along the path stopped me short. Snapping my head down my eyes locked with a pair of small intense beady eyes set into a pointed furry face on the body of what appeared to be the awkward love child of a large weasel and an overfed cat. At that moment, as I was staring down at this oddly unafraid mysterious animal the impact of just how far I was from home settled in. It was a strange land, but I would have to start calling this place home, even with its freaky weasel-cat animals.

From what I remember, Bill Bryson described Australia as a hot, dry, and empty country where most things will sting, prick, scratch, or bite, and in all likelihood kill you. With this in mind it isn't surprising that when I was asked twelve months ago if I would like a job in Australia my answer was "I don't see why not."

Currently I'm seven months into my three-year contract with Geoscience Australia and still discovering things, like the unafraid opossums, that make me think 'what the hell is that', but none of them have killed me yet, so I think I'll be here for a while. Not to say that I don't miss North America. It is hard only to see family pixilated on the computer screen and secretly I miss Peir returning several pages of text all crossed out in red except a few the's, a's, and are's. But on the flip side I still wake in a cold sweat wondering if I remembered to delete the paragraph in chapter four that said:

. . . blah, blah, blah I wonder if Peir realizes that I don't know what I'm talking about . . . all the drawer handles in this office have a total of 78 screws . . . do the "sense of motion" arrows on the wall cracks mean the building is in a transtensional regime? . . . if I punch random keys really fast on the keyboard could I write Shakespeare faster than a room full of monkeys and typewriters? . . . aklfghiquertadhs gaoisdg oidsi-uadi guhaes jflasdlfiu . . . etcetera etcetera.

The repressed thesis tension aside, I find myself working with professionals who take my suggestions and interpretations seriously, much to my surprise, and laugh at my attempts at gardening, much to my humility. The work has pushed me to educate myself

and work with topics like seismic facies, only to turn around a couple weeks later and give a short seminar on how to use my seismic facies methods. I have approached each challenge with a vigor and aptitude the Acadia Earth and Environment Science Department and my advisor Dr Peir Pufahl helped instill in me, and I would be remiss not to thank them.

Currently I'm coming up to speed on a new potential offshore basin before departing on a multi-million dollar marine survey as the petroleum geoscientist. The survey is part of a government initiative to promote frontier petroleum basins and will be sending me 500 km off the western coast of Australia for the next four weeks. Out there I will be involved in the acquisition and subsequent analysis of swath, sub-bottom profiler, gravity, and magnetic data along with dredge samples in water depths of 3,000 to 5,000 m.

So I never could have foreseen where I would be today and couldn't tell you where I'll be in the next three years, but the adventures have been great and I look forward to many more. Now, I've got to run home and pack so I can catch the flight to Perth and the RV Sonne, my new home for the next month.

Gabe Nelson (MSc, 2008)

## HONOURS STUDENTS

Three graduating students finished their honours theses in geology or geoscience-related topics in the spring of 2008:

**Tim Cross** - Lithochemical vectors toward gold mineralization in the Amaranth Vein, Union Hill Deposit, Waihi, New Zealand; *supervisor: Cliff Stanley* (Geology thesis).

**Kieran McDonald** - Sedimentological records of the Holocene history of the Labrador Current; *supervisors: David Piper (AGC-Atlantic) and Ian Spooner* (Environmental Science thesis).

**Kara-Lynn Scallion** - Phosphate deposits in Cambrian rocks of Avalonia in Saint John, New Brunswick, area; *supervisors: Sandra Barr and Peir Pufahl*.

B.Sc. Honours theses involving E&ES faculty in 2008-2009 are listed below:

**Kate Albright** (Geology): Petrology of cuttings from oil wells in the Phetchabun basin, Thailand  
*Supervisor: Sandra Barr*.

**Janice Chipman** (Chemistry): Partial digestions detecting exchangeable labile ions in soils.  
*Supervisors: John Murimboh & Cliff Stanley*.

**Justin Granek** (Physics): Quantification of cathodoluminescence analysis of carbonates.  
*Supervisors: Michael Robertson & Peir Pufahl*.

**Sarah Haverstock** (ENVS): Mercury in lakes in Nova Scotia. *Supervisor: Nelson O'Driscoll*.

**Jennifer Herrick** (ENVS): Policies relevant to mercury. Supervisors: N. O'Driscoll & L. Lusby.

**Claire McIntyre** (ENVS): Ecosystem services provided by the Wolfville Nature Reserve. Supervisor: L. Lusby.

### ***FLETCHER GEOLOGY CLUB***

The Fletcher Geology club had an excellent 2008! The 2008-2009 executive began their work at the year-end banquet in March, which was held at the University Club. The executive includes Amanda Marshall (President), Alex Kaul (Vice-President), Mandy Landolt (Secretary), Nor Afiqah (Treasurer), Leah Chiste (Events Coordinator), and Kate Albright and Jeremy Kozlowski (Student Rep). In September, the welcome back BBQ was a great success with a large turnout of faculty and students from both parts of the Earth and Environmental Science Department.

The end of September also brought the annual Canadian Blood Services Blood Drive, which the Fletcher Geology Club has been hosting for 56 years! There was an enormous turnout from both Acadia and surrounding community. Thanks to all who came out to support this great cause!

This fall the club organized a day trip to Amethyst Cove. The weather was beautiful that day for the hike over part of the Cape Split trail, and the climb down to the beach was an exciting adventure for those for whom it was their first visit. At the end of October, students travelled to the University of New Brunswick in Fredericton to participate in AUGC 2008. Kate Albright

presented preliminary findings from her honors thesis research, *Petrology of cuttings from oil wells in the Phetchabun basin, Thailand*. Several of the students who attended also won door prizes at the closing banquet. Hard hats are now plentiful in the department!

In December the annual Christmas party was hosted at Dr. Raeside's house. The customary Yankee swap took place; alcoholic beverages were again popular gifts to give and steal, featuring several exotic bottles of wine, and even some homemade brews! With an adventure-packed 2008 at a close, the club is looking forward to an even more exciting 2009!



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### **CO-OP EXPERIENCES**

Students who graduated more than 5 years ago might not be aware of the more recent expansion of the co-op programs on campus, where students can work for 4 months in Geology (which helps to pay some expenses!) and gain valuable on-site experience. In the past year, Geology students have worked for the Iron Ore Company of Canada in Labrador City (Luke Marshall and Kité Akpughe), the Cape Breton Fossil Centre (Kate Albright), the NS Museum of Natural History (Daniel Lake), Etruscan Resources, Bedford (Alex Kaul) and the Geological Survey of Canada – Atlantic (Jeremy Kozlowski). Not only do these placements give opportunities to our students, but the returning students bring back insight into the business from their experience.

### **ACADIA GEOLOGY FACEBOOK**

Interested in connecting with your peers in the 21<sup>st</sup> Century fashion? Some of our more recent grads have set up an Acadia Geology facebook page, and have been

posting their highlights. You can sign up to join at <http://www.facebook.com/n/?group.php&gid=2230922055> (that's all one URL, no spaces or other characters, for those who wonder) to see over 100 photos of your activities (including a surprising number of graduation photos – obviously a highlight in many people's lives!)

### **WE STILL NEED YOUR HELP!**

We recognize the need for our students to have a strong grounding (pun intended) in field methods and as much field experience as possible when they graduate. Increasing costs and other financial pressures on our budget make it increasingly difficult to keep our field schools affordable for students. Hence we are grateful for any donations to help us to subsidize the cost of field school for our students. Any amount is a help. Please send donations clearly marked for "Geology Field School" (but cheque made out to Acadia University) to Sandra Barr, Acting Head, Earth and Environmental Sciences, Acadia University, Wolfville, NS B4P 2R6.



## WHERE ARE THEY NOW?

Frank Dennis

*Each year we ask a graduate to write an article on his/her past and current activities since leaving Acadia. This year we invited Frank Dennis, who studied at Acadia from 1985-1987 as a MSc student.*

I am a contaminated land “expert”. Now the reason that people like me can make any money is that large companies with lots of land in various states of contamination want to do what is best for the environment and clean it up. Mmm, not exactly. There are lots of reasons for managing the quality of the land that you own. Socio-environmental awareness is only one of them. Whatever the reason, most companies with any kind of “legacy” contamination problem will have some kind of strategy for managing land quality on their sites. At the start of any investigation I ask my clients what they want the land for? What is its end use? Do they want it in a state fit for a Great Crested Newt habitat, or would they like to continue industrial operations on the site? The answer will help to define any clean-up criteria. So environmental consultants such as I, will prod and poke clients to proceed with the end clearly defined. After all you don’t take a trip in a car without knowing where your final destination lies (at least not in the UK, gas is too expensive).

One’s career is very similar: it’s a journey. The difference is that although you may think that you know where you are going when you set off, I pretty much guarantee that you will be somewhere completely different by journey’s end.

Let’s take me, for example. I figured that I would learn a bit about rocks, do some prospecting and own a couple of gold mines by the time I was 30. Well, in reading the first sentence of this article you will have realised that my journey did not take me anywhere near where I thought I was headed when I set out.

I became interested in geology when one of my best friends, James MacEachern (who recently visited Acadia on a lecture tour as the GAC Hutchison Medal Winner) showed me some of the stuff that he was working on in Geology 100 at the University of Regina. You see, the Prairies (where I grew up) are so flat that I only really knew 2 dimensions: x and y. The sky (half of the z dimension) was usually blue with really not much to look at. So the introduction of the other half of the z dimension (*i.e.* what was underneath my feet) gave me a whole different perspective on the world and I was intrigued.

I completed my first degree in Regina and spent each summer in northern Saskatchewan fighting off flies but making much more money than any other student that I knew (first step on the road to the gold mines). I graduated in 1985 and wrote to Sandra Barr

who, I had been informed by one of the faculty members at the university, was a great geologist. I was actually a bit surprised when she wrote to say that she had a MSc for me: Geology and Mineralisation of the Deep Cove Pluton, Cape Breton Island. It’s been said before, but I will say it again. I had a fantastic time at Acadia and I simply love the place. I haven’t been back since 1988 but I think about it all the time. The school was great, the faculty were great, and my fellow classmates kept me fully entertained. I almost didn’t complete my MSc degree and it took a stern lecture by Sandra to let me know that I was being just a bit too entertained and that it was time to buckle down and do a bit of work.

By the time I left Acadia, mining exploration was in the middle of a significant boom with the government giving a 166% tax write-off to investors who bought shares in exploration companies. Anybody who could even spell geology could get a job and it wasn’t long before I found myself working in Quebec looking for that first gold mine. The boom times of course did not last (a word of warning: they never do) but I was lucky that I found a job with a mid-sized gold producer in the Abitibi before I ran completely out of luck.

I worked for a total of 5 years in Quebec and learned an amazing amount about geology, the mining industry, and most of all about myself. I had an opportunity to do the type of work that people in offices only dream of. I mapped (underground and above ground); I ran geophysical surveys; I supervised drilling operations (again from both above and below ground); I got to run around the woods all day in snow shoes; and I learned how to speak French. Coming from the Prairies, the latter was not one of my immediate priorities but as it turned out it was as useful as the geological knowledge that I gained.

The life of an exploration geologist is not an easy one though and after 5 years of working away from home for 9 months out of every 12, I realised two things: 1) I didn’t really like living in the middle of nowhere; and 2) starting a family was going to be nigh-on impossible unless I changed careers. What my education and experiences had taught me was that I could do whatever I wanted (except find that elusive gold mine). I was smart, confident, and hey, bilingual so after reading up on financial management while sitting at a drill rig, I set off for Montreal to work at ScotiaMcLeod as a stockbroker.

Not the best move that I ever made: the economy was crap at the time and, well, let's face it: I was a scientist, not a salesman.

In 1991 I decided not to make a minor change in my life but a major one and so I sold everything that I owned (surprisingly little) and headed back to the UK where I was born. I had heard about environmental geology and so I ditched the idea of owning the gold mines and thought that Shell could do with a decent Global Head of Environment (may as well aim high – again). I ended up doing a PhD at Reading University, working alongside famous geologists such as JRR Alan. It was great to be back at school and once again I had a ball. My research topic was the “Paleohydrogeology of the Chalk Aquifer – London” and on the first day in the “field” I drove past Buckingham Palace – result! Unfortunately my supervisor, John Andrews (great man), died just as I was starting to write my dissertation. I had already written a thesis at Acadia and drew heavily on that experience to write my PhD in 4 months.

I have had a number of jobs since I left Reading in the mid 1990's. Most of these have been in environmental consulting although I did work for 4 years directly for the UK Atomic Energy Authority at the Dounreay nuclear site on the north coast of Scotland where I was responsible for delivering environmental projects: contaminated land management, waste strategies, and finding a solution for the treatment of radioactive particles that had been released from the site. I am currently working

for Golder Associates (a great Canadian company) where, *inter alia*, I manage contaminated land investigations at the UK's largest nuclear site.

A year ago I was invited to act as Technical Advisor to the International Atomic Energy Authority on the management of land at nuclear sites. It was the second time that I have worked for the UN: the first was in 1996 when I was engaged as Technical Advisor for a water quality study in Iran – by the way, if you get a chance to visit Iran, take it; the people are as friendly as they are in Nova Scotia.

In the past 10 years I have been able to work and travel extensively in Europe, Africa, and Asia. I have not ended up (physically, emotionally, or professionally) where I thought I would be when I started my geological journey 27 years ago but I am more than happy where I am. Geology is one of those disciplines that gives you the flexibility to be whatever you want to be. So study hard now and don't be afraid to step boldly onto your chosen career path!

On the personal side, I met and married a Spaniard while at Reading. Esther and I have two children: Miguel (9) and Iona (6). We spend a lot of time in Spain and plan to move there shortly. We all speak Spanish, the food is good, the wine is better, so why not. It will be the start of another adventure.

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### KEEPING IN TOUCH

*If you have an item of interest, or any news of your activities (or those of your classmates), please let us know. We will try to incorporate as much as possible into future newsletters. Did you write an annual newsletter at Christmas? Send a copy to Dr. Barr or Dr. Raeside at the Department of Earth and Environmental Science ([sandra.barr@acadiau.ca](mailto:sandra.barr@acadiau.ca) or [rob.raeside@acadiau.ca](mailto:rob.raeside@acadiau.ca))*

**Gail (Wright) Crouse** (BSc '91) dropped by on summer vacation, taking a day off from visiting parents and in-laws. She runs a well-site consulting business in Regina, Wrightway Consulting, working mostly in SE Saskatchewan and SW Manitoba. She and her husband had their first baby in September, and named him Grant Waylon Crouse.

**Corey Curl** (BSc '04) is the Lab Coordinator/Safety Officer for AGAT Laboratories (Environmental Division) in Grande Prairie, Alberta. He started there in 2007 as a laboratory analyst, doing chemical analysis on soil, water, and sludge samples from areas in Alberta and B.C. on stations for pH/EC/SG/alkalinity, COD, hexavalent chromium, ammonia, mercury, microtox using ICP-MS. He got engaged

last summer on a vacation back to Newfoundland, but so far hasn't told who to.

**Peter Dalton** (BSc '04) continues with Erdene Resource Development, spending most of his time in the Dartmouth office but still doing the odd work hitch in Mongolia, where “the true excitement of exploration takes place.” He had the opportunity to be involved in designing and managing exploration programs in the Mongolian countryside, conducting GIS-based work on a molybdenum deposit in southern Mongolia, and mapping coal seams 3.5 km offshore under the Atlantic in Donkin, NS. He got engaged in June on a pahoehoe outcrop on the North American side of the Mid-Atlantic Rift Valley in Iceland.

**Ian DeWolfe** (BSc '00) is now working at Spearpoint Energy Corp. in Calgary.

**Jodi Eye** (BSc '04) joined the Acadia Centre for Social and Business Entrepreneurship team as Executive Assistant.

**Owen Gaskill** (BSc '99) provided a paper arising from his Masters thesis at the GAC-MAC conference in Quebec City in May. The paper was given by his supervisor, Dr. Allison Leitch, at Memorial University, who began the talk by stating Owen was “now making big bucks in Calgary” and “he was not the type of student who would accept the obvious conclusions of his supervisor”.

**Jo-Anne Goodwin-Bell** (BSc '95) still lives near Ottawa, raising koi in her backyard, much to the delight of a heron which helps to keep the numbers under control. She works in post-doctoral studies in metamorphic geology at Carleton University.

**Jason Hines** (BSc '03) lives in Fredericton and took a position CGG Veritas as a navigator for their seismic vessels.

**Sang-Gi Hwang** (MSc '85) is working at PaiChai University, Korea teaching rock engineering in the Department of Civil, Environmental and Railroad engineering. He has 7 graduate students from Vietnam, Philippines and Korea. His daughter Pamela graduated from UBC and son Andrew finished his 3rd year at Carleton University.

**Karen Johnston** (BSc '02) and **Colin Zwicker** (BScH '03) have announced their engagement and pending marriage in August 2009. Both are working for ESRI in Redlands, California.

**Matt Leybourne** (MSc '88) has moved back to Lower Hutt, New Zealand working in the Offshore Minerals program for the Institute of Geological Sciences, looking at the chemistry of hydrothermal plumes and vent fluids.

**Edwin Macdonald** (BSc '87) is VP Exploration for Contact Exploration Inc., involved in oil and gas projects in New Brunswick and Nova Scotia. He is happy to have been able to return with his family from Calgary to live in the New Glasgow area. He was encountered at the New Brunswick Exploration, Mining, and Petroleum conference in November.

**Jason MacKenzie** (BSc '96) sent notice of the defence of his PhD thesis shortly before Christmas. Entitled "Volatile metal mobility and fluid melt partitioning: Experimental constraints and applications to degassing magmas".

**Lachlan MacLean** (BSc '99) completed his PhD in July 2007, then took up a post-doctoral scholar position at Penn State University in the Center for Environmental Kinetics Analysis, a NSF/DOE-funded under the banner of "Environmental Molecular Sciences" program, where he studied the mechanisms of mineral precipitation, trace element incorporation and bacteria-mineral interactions. After his stint at Penn State he moved again for another post-doc position in a Canadian Government Laboratory Visiting Fellowship at Health Canada and CANMET, in Ottawa. He is using XAFS to study the speciation of metals (Pb, Ni, Cr, etc.) in dust particles in order to understand how a metal's chemical and physical form influences its bioaccessibility. He and his wife Heather and daughter Vivianne enjoying being back in Canada and of course it's especially nice to be in a city with a professional hockey team.

**Patrick Moran** (BSc '05) wrote in September to let us know his MSc. thesis was nearing completion. It is on gold mineralization at the Musselwhite Gold Mine, in the North Caribou Lake Greenstone Belt of Ontario.

**Lauren (MacLeod) Ostridge** (BSc '06) was finishing up an MSc degree with CREWES, the applied geophysics research group at the University of Calgary last summer and working as a geologist at Action Energy Inc. Her thesis involved evaluating the geology of two sections that had been willed to the University of Calgary and identifying any hydrocarbon potential. She undertook a seismic survey over the area to identify Precambrian faulting (which would give a reservoir) and because of the unconventional “oil company” behind the project (the U of C) got press exposure right up to the level of the Globe and Mail a few times.

**Clayton Peskleway** (MSc '96) has been working as a geologist at Detour Gold Corporation's Detour Lake project in the Abitibi Greenstone Belt in northern Ontario, learning to enjoy French Canadian food like creton sandwiches and salmon pie with egg sauce.

**José Texidor-Carlsson** (MSc '07) and **Helen** (departmental secretary, 2006) announced on Facebook on 1 September that baby Rachael was born the previous day. They have been diligent at sending us photos of Rachael and her big sister Anna.

**Michael Thicke** (MSc '87) has worked with BHP Billiton for several years. He was transferred back to Vancouver at the end of 2003, initially working in geology, but now doing more management.

**Ryan Toole** (BSc '06) presented a poster on his MSc research at UNB at the GAC-MAC conference in Quebec City in May. He was looking forward to heading off to Millertown, Newfoundland, where he had a contract on a base metals drill site with Paragon Minerals.

**Stu Venables** (BSc '99) wrote just before Christmas to tell us of the birth of his son Levi, a sister for Sophia. So we did not bother him this year to compile an update on our Calgary-based grads. Next year, however....

**Heather Wolczanski** (BSc '06) was encountered at the GAC-MAC conference in Quebec City in May. She was completing her MSc thesis studying the

chemistry and age of the metasedimentary rocks of the Flinton Group in southern Ontario.

**Jenn Wilson** (BSc '08) was selected to intern with the Rocky Mountain Institute MOVE team, a six month internship where she had the opportunity to gain experience consulting with businesses, organizations and governments and helping clients to increase their energy efficiency in the transportation sector.

**Nadine Wood** (BSc '05) has been working at the New Brunswick Museum and has finished up her Masters degree in Resource and Environmental Management at Dalhousie where she examined environmentally responsible land use planning and how policies are created to protect significant paleontological sites.

### HOW WE USED TO LOOK .....

*This photograph, taken in the spring of 1984, may bring back some memories (especially for those of you who can recognize yourselves or someone you know in the photograph!). Where have the years gone?*

